

CLAIMS

1. A filtering apparatus, comprising:
  - a filter cap having a filter chamber defined therein, said filter cap comprises a side wall having an opening defined therein;
  - 5 an oil filter positioned in said filter chamber; and
  - an actuator movably secured to said filter cap, wherein a portion of said actuator extends through said opening into said filter chamber.
2. The filtering apparatus of claim 1, wherein:
  - 10 said actuator comprises a detent button having a first end and a second end,
  - said first end of said detent button is positioned in said filter chamber,
  - and
  - said second end of said detent button extends out of said opening.
3. The filtering apparatus of claim 1, wherein:
  - said filter cap has a filter retainer secured thereto, and
  - said filter retainer is positionable between (i) a retention position in which said filter retainer retains said oil filter in said filter chamber, and (ii) a release
  - 20 position in which said oil filter is removable from said filter chamber.
4. The filtering apparatus of claim 3, wherein:
  - said actuator is positionable between an actuated position and a non-actuated position,
  - 25 said actuator exerts a force on said oil filter when said actuator is positioned in said actuated position, and
  - said filter retainer is positioned in said release position when said actuator is positioned in said actuated position.

5           5. The filtering apparatus of claim 1, wherein:  
          said filter cap has a plurality of spring arms secured thereto,  
          said oil filter has a post extending therefrom, and  
          a portion of said post is releasably retained by said spring arms.

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          6. The filtering apparatus of claim 1, wherein:  
          said filter cap has a plurality of spring arms secured thereto,  
          said oil filter has a post extending therefrom,  
          said post has a spheroid-shaped member defined therein, and  
10       said spheroid-shaped member is positionable between said plurality of  
          spring arms.

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          7. The filtering apparatus of claim 6, wherein said actuator is  
          positionable in contact with said spheroid-shaped member.

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          8. The filtering apparatus of claim 1, wherein:  
          said oil filter comprises a center tube and a filter element,  
          said center tube is non-removably secured to said filter cap, and  
          said actuator is configured to exert a force on said filter element.

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          9. A center tube for use with an oil filter cap which has a detent button  
          operable to release said center tube from said filter cap, said center tube comprising:  
          a tube body having a number of orifices defined therein; and  
          a post having a first end portion which is secured to said tube body and  
25       a second end portion which is configured to be contacted by said detent button.

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          10. The center tube of claim 9, wherein said second end portion of  
          said post comprises a spheroid-shaped member.

11. The center tube of claim 10, wherein said spheroid-shaped member is configured to be captured by a number of spring arms associated with said oil filter cap.

5 12. The center tube of claim 11, wherein said spheroid-shaped member is configured to engage a number of cam surfaces defined in each of said number of spring arms.

13. A method of removing an oil filter from a filter cap, comprising  
10 the steps of:

moving an actuator which extends through a side wall of said filter cap so as to exert a force on said oil filter; and

moving said oil filter relative to said side wall in response to said force being exerted on said oil filter.

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14. The method of claim 13, wherein:

said filter cap has a filter chamber defined therein,

said oil filter is positioned in said filter chamber,

said actuator comprises a detent button having a first end which is  
20 positioned in said filter chamber and a said second end which extends out of said opening, and

said step of moving said actuator comprises moving said detent button so as to exert said force on said oil filter with said detent button.

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15. The method of claim 14, wherein said step of moving said oil filter comprises ejecting said oil filter from said filter chamber in response to said force being exerted on said oil filter by said detent button.

16. The method of claim 13, wherein said filter cap has a filter retainer secured thereto, further comprising the step of:

moving said filter retainer from a retention position in which said filter retainer retains said oil filter to a release position in which said oil filter is movable  
5 relative to said filter cap in response to said force being exerted on said oil filter.

17. The method of claim 13, wherein (i) said filter cap has a plurality of spring arms secured thereto, and (ii) said oil filter has a post extending therefrom, further comprising the step of:

10 moving each of said plurality of spring arms from a retention position in which said plurality of spring arms cooperate to retain said post to a release position in which said post is movable relative to said filter cap in response to said force being exerted on said oil filter.

15 18. The method of claim 17, wherein said step of moving said actuator comprises moving said actuator into contact with said post so as to exert said force on said post.

19. The method of claim 13, wherein (i) said filter cap has a plurality  
20 of spring arms secured thereto, (ii) said oil filter has a post extending therefrom, and (iii) said post has a spheroid-shaped member defined therein, further comprising the steps of:

urging said spheroid-shaped member into contact with each of said plurality of spring arms; and

25 moving each of said plurality of spring arms from a retention position in which said plurality of spring arms cooperate to retain said spheroid-shaped member to a release position in which said post is movable relative to said filter cap in response to said urging step.

20. The method of claim 19, wherein said step of moving said actuator comprises moving said actuator into contact with said spheroid-shaped member so as to exert said force on said spheroid-shaped member.

5           21. The method of claim 20, wherein said urging step comprises urging said spheroid-shaped member into contact with each of said plurality of spring arms in response to movement of said actuator into contact with said spheroid-shaped member.

10           22. A filtering apparatus, comprising:  
a filter cap having a filter chamber defined therein;  
a fluid filter positioned in said filter chamber; and  
an actuator movably secured to said filter cap, wherein said actuator is operable to eject said fluid filter from said filter chamber.

15           23. The filtering apparatus of claim 22, wherein:  
said actuator comprises a detent button having a first end and a second end,  
said filter cap comprises a side wall having an opening defined therein,  
20   and  
said detent button is positioned in said opening such that (i) said first end of said detent button is positioned in said filter chamber, and (ii) said second end of said detent button extends out of said opening.